SCCARA-GRAM

Santa Clara County
Amateur Radio Association

Volume 51, Number 7 July 2026

ARRL News

From *ARRL News*, June 22, 2026

New Technician Question Pool Takes Effect July 1

On July 1, 2026, a new Element 2 Technician class question pool will take effect for license examinations. VECs and VEs must have new test designs available for use at exam sessions effective that date.

The newly revised pool, released in December 2025 (updated and re-released on February 19, 2026) by the Question Pool Committee (QPC) of the National Conference of Volunteer Examiner Coordinators (NCVEC), must be in use starting July 1. There are 409 questions in this pool, down slightly from 412 in the previous pool. The pool also includes three diagrams used for some of the questions. View all current question pools on the NCVEC website at www.ncvec.org.

ARRL VEC Manager Maria Somma, AB1FM, advises that the ExamTools examination system will automatically switch to the new pool and exams on July 1. For ARRL-VEC VE teams using online exams at in-person sessions or for remote video-supervised sessions, no action is required.

"VE teams using paper exams must discard all older Technician tests and print new versions from ExamTools," said Somma. "ARRL-supplied 2022 series Technician exam booklets and exams generated from the old pool are valid only through June 30; after that date, they are no longer valid."

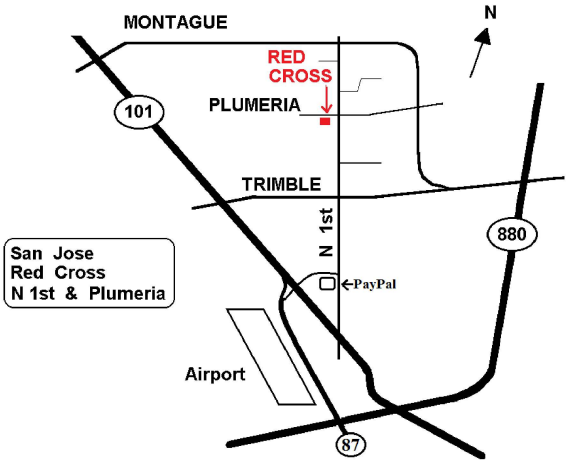
New editions of ARRL licensing publications for the 2026-2030 Technician pool, the 6th edition of The ARRL Ham Radio License Manual, the 9th edition of ARRL Tech Q & A and 11th edition of Gordon West's Technician Class study guide will be available starting this month, for exams taken on or after July 1, 2026.

Calendar

7/13 SCCARA General Meeting
7/20 SCCARA Board Meeting
7/25 Club Station open

General Meeting

Day:	Monday, July 13
Time:	7:30 PM
Place:	San Jose Red Cross, meeting room 3
Featuring:	*{to be announced}*



SCCARA Balun Project

Donald Wile, KG6GO 6/21/26

This report is based on the 9:1 unun Random Wire End Fed Antenna design explained in the following PDF document https://www.earchi.org/92011endfedfiles/Endfed6_40.pdf

The SCCARA sponsored each attending member of the May and June meetings, to build their own BALUN or UNUN to create an antenna or RF choke of their choice. I chose to build the random wire End Fed (EF) antenna using a 9:1 unun which was constructed during the build. This report documents my experience with this antenna.

Executive Summary

This antenna kicks butt. Excellent signal to noise and propagation. Many thanks to all SCCARA members who made this awesome project happen!

The ***SCCARA-GRAM*** is published monthly by the **SANTA CLARA COUNTY AMATEUR RADIO ASSOCIATION**, PO Box 106, San Jose CA 95103-0106.

SCCARA was formed in 1921 and became a non-profit corporation in 1947. SCCARA is an affiliate of the American Radio Relay League (ARRL).

The club station is **W6UW**, located at the San Jose Red Cross.

Permission to reprint articles is hereby granted, provided the source is properly credited.

The deadline for articles is the **last Monday of the month**.

Web page: www.sccara.org

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(officers are also directors)

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SCCARA REPEATERS

SCCARA owns and operates two repeaters under the call W6UU:

2 m:	146.985 - PL 114.8
70 cm:	442.425 + PL 107.2

Phone auto-dial and auto-patch is available. The 2 m repeater is located at Eagle Rock near Alum Rock Park in the foothills of east San Jose. The 70 cm repeater is located at the Regional Medical Center (formerly Alexian), east of downtown San Jose, north of 280 and 101.

SCCARA NETS

On our 2 m repeater: Mondays at 7:30 PM, (not the second Monday--that's our meeting night); net control: Don Village, K6PBQ. On 10 m, 28.385 MHz USB, Thursdays at 8:00 PM; net control: *{to be announced}*. Visitors welcome.

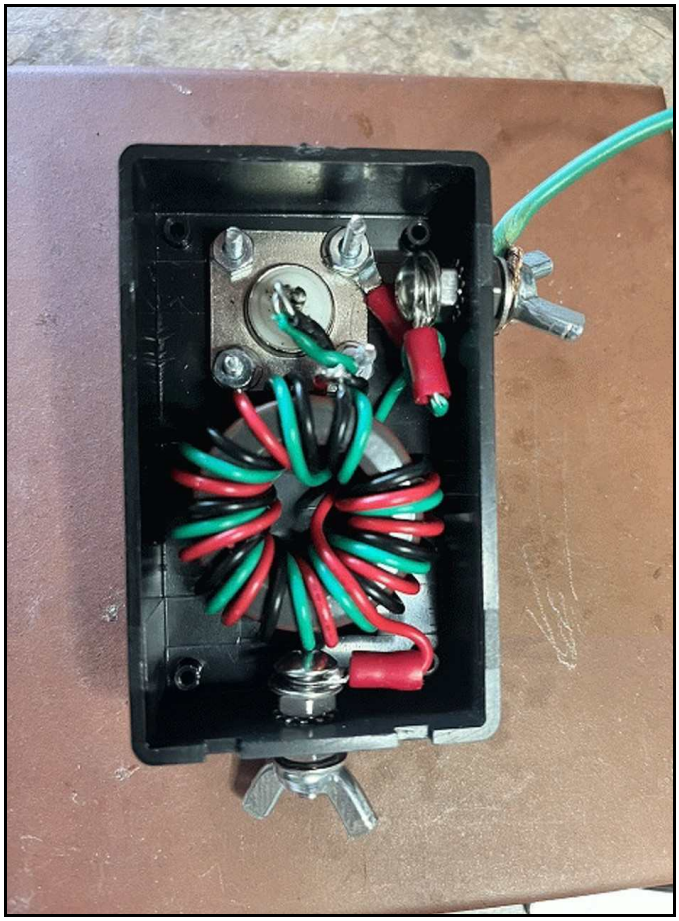
N0ARY PACKET BBS

SCCARA hosts the packet BBS N0ARY (connect to n0ary-1). User ports: 145.09 MHz at 1200 baud, 433.37 MHz at 9600 baud, and telnet sun.n0ary.org (login "bbs"). Sysop: Gary Mitchell, WB6YRU For general packet info, see the NCPA web site ncpa.n0ary.org.

AMATEUR LICENSE TESTING

ARRL/VEC Silicon Valley VE group: https://www.svve.org
Morris Jones, AD6ZH: 408-507-4698

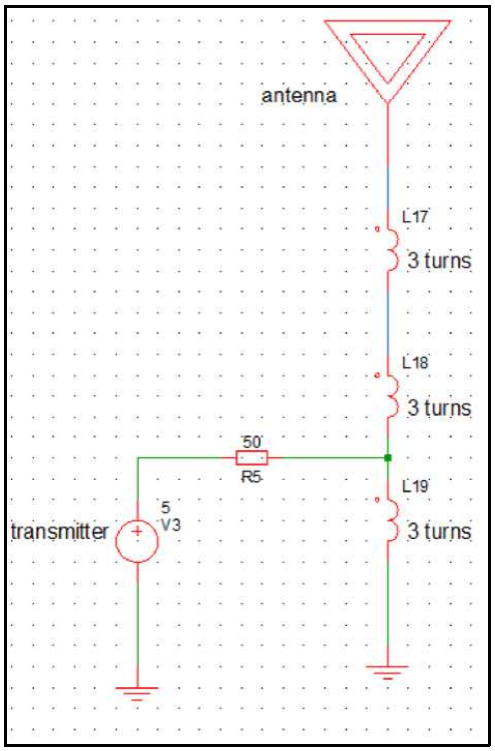
SCCARA members busy with building the balun/unun project. (Photos courtesy of KG6GO)



Finished 9:1 UNUN built by Don Wile/KG6GO

KG6GO's finished 9:1 UNUN with 4.5 foot green counterpoise attached (not needed with my long coax back to the shack)

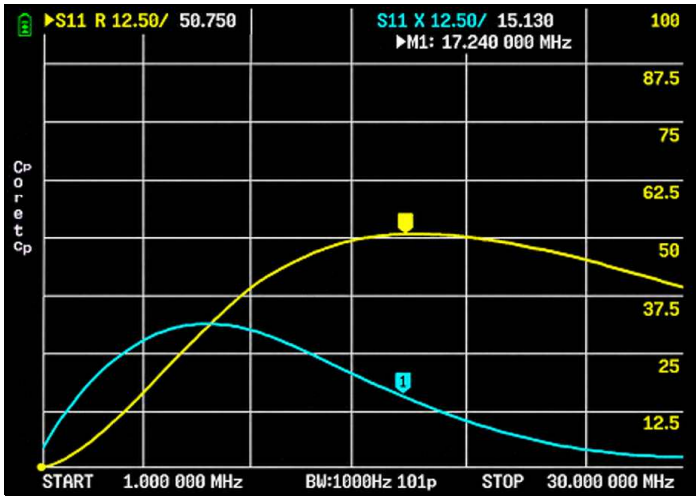
A quick note on how the 9:1 unun works



Unun with 9 trifilar turns connected into 3 sections of 3 turns each

Because of the trifilar construction, magnetic flux crossing any of the three turn sections, induces the same voltage in each of the 3 turn sections. Thus driving the bottom 3 turn section results in a voltage at the antenna, that is 3 times larger than the voltage on the lower section. This 3 to 1 voltage transformation results in a 9 to 1 impedance transformation (square of the 3:1 turns ratio).

Prior to connecting the UNUN to my radio I decided to use a Nano VNA to check the transformer. The following screen show displays the resistance and reactance when a 470 Ohm resistor is connected from the antenna output to ground. Ideally , with a 9:1 impedance transformation, the VNA should measure 470/9 = 52 Ohms.

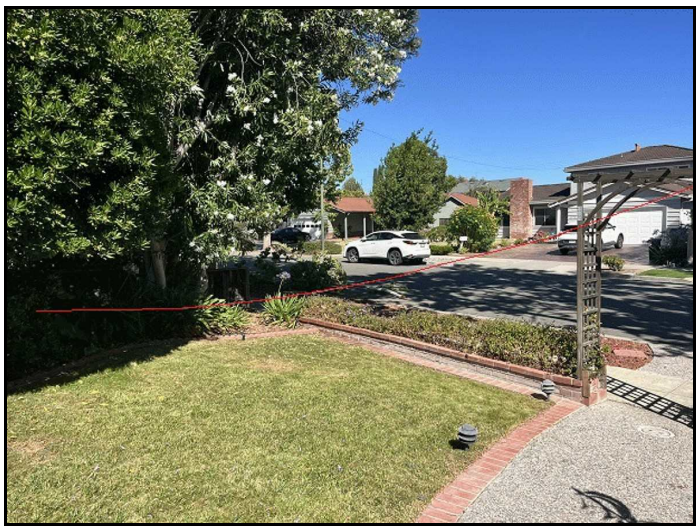


VNA sweep 1 MHz to 30 MHz with 470 Ohm antenna load to ground: YELLOW = resistance, BLUE = inductive reactance . NOTE: both resistance and reactance scales are the same 0 Ohm to 100 Ohm (right scale).

From the above I measure 50.75 Ohms at 17.24 MHz. Thus the 9:1 unun is doing its impedance transformation job.

{Notice it's excellent around 15 to 20 MHz, but rolls off. Toroid cores come in a variety of mixes, each with different characteristics. That roll-off will change with a different mix. We used mix 2, some say mix 43 is better. -- Editor}

With the UNUN completed it was time to test the antenna. For this I decided to focus on 20 meters (which is the band I use most often). I decided to compare the EF antenna to my in ground 40 m to 10 m vertical antenna. I erected the base EF antenna close to the vertical antenna to minimize variables. Comparisons were made by physically connecting the coax feed to one antenna or the other. Note for the EF antenna, I did not have a choke on the coax feed into my shack.



View of the EF antenna (I highlighted it in RED) connected to entrance trellis (note: the antenna is broadside East/West with the end tied 8 feet off the ground tied to the trellis)

Setup

Both antennas used the exact same coax connection to my ham shack. I physically disconnected and reconnected the coax to the antenna under test. The length of the antenna wire is 26 feet and I also added a 4.5 foot counterpoise to the counterpoise connector on the 9:1 unun. The length of coax back to my shack is estimated to be approximately 75 feet. I own a ATU-100 EXT antenna tuner to tune the EF antenna.

Signal to Noise Measurement

My goal in the first measurement is to compare the signal to noise of the two antennas. My somewhat crude method is to tune to WWV at 15 MHz and note the S-meter reading for both antennas. Then I tune to 15.050 MHz, where there is no signal, and I record the S-meter reading again. For these measurements I had my IC705 set to receive AM with a bandwidth of 9 kHz and the RF gain reduced by 20% while using PREAMP1. Here are the results:

Antenna	WWV	Noise
Vertical	9 S-units	3.5 S-units
EF	9 S-units	2 S-units

One S-unit corresponds to about 6 dB. Thus the 3.5 - 2 = 1.5 S-unit difference in noise between the EF and vertical translates to 1.5 • 6 = 9 dB lower noise. Since both antennas received WWV at the same signal strength of 9 S-units, we can conclude that the EF antenna has a 9 dB signal to noise advantage over my vertical.

I also tried a different method (which I won't describe) that used the IC705's waterfall reference level to determine difference in signal to noise. With that method I measured that the EF antenna had a 4.5 db signal to noise advantage over the vertical. Both methods for comparing signal to noise are somewhat crude (which explains the difference in the results), but I think it's fair to say that the EF antenna as a significant signal to noise advantage over my vertical!

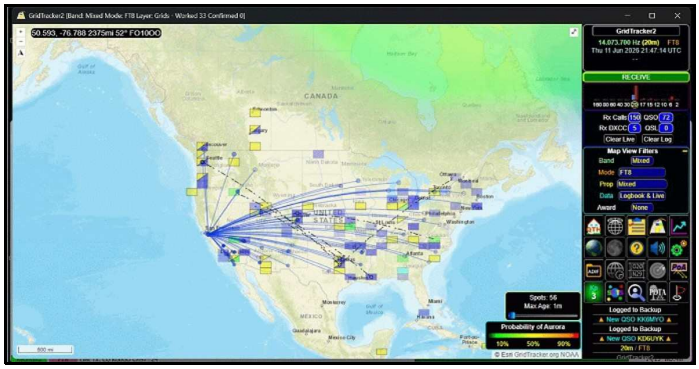
Why is that you ask? I didn't know either, so I asked ChatGPT. In my own words here is what this AI explained:

Verticals, because of their vertical polarization, are more sensitive to atmospheric, distant RF noise sources and man-made noise. Most residential noise sources (switching power supplies, LED lights, solar inverters, power lines, Ethernet cables, etc.) produce electric fields that are often vertically polarized. Because the EF antenna was not erected vertically, it was less sensitive to these vertically polarized noise sources. Also, a vertical antenna is sensitive in all directions, while the EF is most sensitive broad side to the antenna and was possibly pointing away from the noise sources coupling into the vertical.

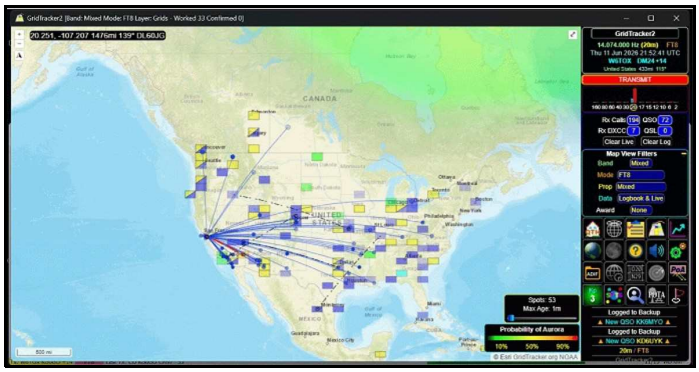
20 Meter Propagation Comparison using FT8

Next I compare 20 meter FT8 propagation. FT8 is a digital mode using the WJSTX program. To display my FT8 propagation I used the program Grid Tracker. The blue lines on the maps below indicate where other FT8 operators have heard my signal. Thus the number of blue lines as well as the length and location tell allot about how well the antennas compare. For this test I was pumping out about **50 Watts** of power.

Visually it's apparent that more and farther stations received my signal using the EF antenna than with my vertical.



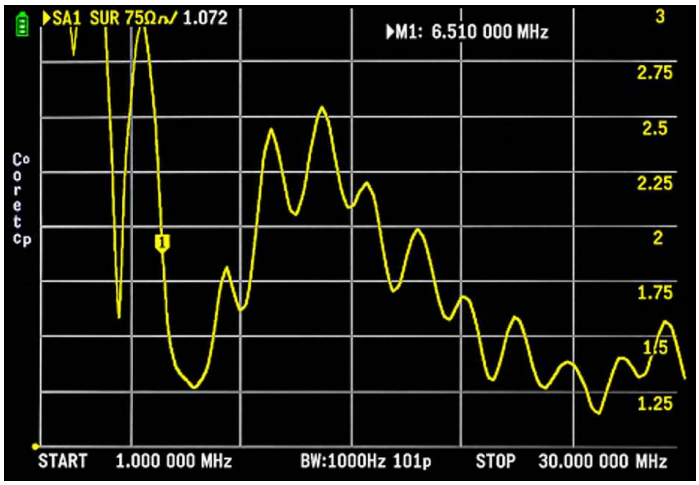
End Fed: WJSTX Grid Tracker 20 m FT8 map



Vertical: WJSTX Grid Tracker 20 m FT8 map

Vector Network Analyzer Measurements of SWR

In this section I will use a Vector Network Analyzer (VNA) to measure the SWR of the system. I'll be using the NanoVNA-H4 .

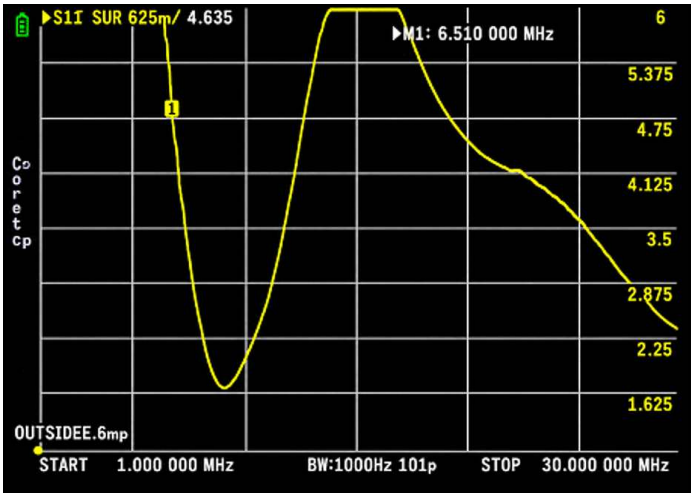


EF SWR inside my shack (no tuner). Sweep range 1 MHz to 30 MHz, max SWR display scale = 3

The SWR looks pretty good even without a tuner. I also compared the SWR, to the SWR minus the 4.5 foot counterpoise (which was connected right at the unun box) and found no difference to the above when I measured the SWR in my shack. The SWR plot shown above was taken with the end of the EF antenna supported 8 feet off the ground.

I also looked at the SWR measurement with the end of the EF antenna supported 3 feet off the ground, which left most of the antenna parallel to the ground. There was no significant difference between the two SWR measurements.

I then checked the SWR right at the EF antenna with only the 4.5 ft counterpoise attached (i.e. no coax counterpoise contribution).



EF SWR at the unun outside, only 4.5 ft counterpoise. Sweep range 1 MHz to 30 MHz, max SWR scale = 6

Clearly SWR of the EF antenna benefits greatly from the effective counterpoise added by the coax running to my shack. This is evident because of the much higher over all SWR without the coax counterpoise.

In this last test I will check to see if my antenna tuner is able to minimize the SWR on the following HAM bands:

Band (m)	Freq. (MHz)	SWR	Comment
80	3.75	1.17	GOOD
40	7.150	1.8	OK
20	14.150	1.04	GOOD
15	21.200	1.05	GOOD
10	28.500	1.15	GOOD
6	52	1.2	GOOD

Conclusions

This EF antenna rocks. It's performance appears to exceed that of my in ground vertical, with both improved signal to noise and propagation, as tested on 20 meters. I have not repeated these tests on other bands, but I expect it would do as well or better than my vertical. I was successfully able to tune the SWR of the EF antenna from 80 m to 6 m bands with no difficulty.

Meeting Minutes

General Meeting, June 8, 2026

Meeting room 3, San Jose Red Cross, N. 1st St and Plumeria

Meeting called to order by President Gregg Lane KF6FNA at 7:33 pm

Attendance: Gregg KF6FNA Janet KF6PUQ, Gary WB6YRU, Don KG6GO, George N6NKT, Lou WA6QYS.

Announcements
President Gregg KF6FNA:
We have the toroids cores and can finish the baluns from the project meeting last time.

Field Day is June 27-28, from 1800 UTC Saturday (11 AM PDT) through 2059 UTC Sunday (1:59 PM PDT). We will operate Field Day from the club station, similar to last year. We plan to have three HF stations: CW, PHONE, and DIGITAL, plus a GOTA station on 2 m / 70 cm. The GOTA station will be out in the front parking lot like last time. The 2 m radio in the radio room will be for monitoring our repeater. We will have a BBQ for lunch on Saturday: hotdogs, hamburgers, buns, condiments, drinks, and chips. Everything else will be pot-luck or fend for yourself (there are several places to eat in the area). The BBQ grill will be available for anyone to wants to use it. The kitchen/break room has a refrigerator, stove, and microwave. Anything put in the refrigerator needs to be labeled with your name or "SCCARA" if it's for pot-luck.

The rest of the meeting was spent working on our balun projects. We have some parts left over if anyone want to make one later.

Meeting adjourned at 9:30 pm

Gary Mitchell WB6YRU, recording for the Secretary

Board Meeting, June 15, 2026

Held verbally on our 2 m repeater W6UU/R

Meeting called to order by President Gregg Lane KF6FNA at 7:48 PM

Attendance:
President Gregg Lane KF6FNA, Treasurer Ned Tufekcic AC6YY, Station Trustee Don Village K6PBQ.
Directors: Lou Steirer WA6QYS.
Absent: Wally Britten KA6YMD, Janet Motha KF6PUQ, John Parks W6JPP
Visitors: Gary Mitchell WB6YRU, editor (taking minutes)
We don't have a quorum.

Officer Reports

President's Report, Gregg KF6FNA:
Field Day is June 26-28. I'll make some calls to make sure our BBQ supplies will be bought.
We host the July 11 flea market at West Valley College. Lou has helped out a lot in the past. I'll be reaching out to him and others who might like to help.

Vice President's Report, (vacant)

Secretary's Report, (vacant):
Gregg KF6FNA: The general meeting minutes were published in the SCCARA-GRAM. Any corrections?
(nothing heard)
The board minutes were also published. Any corrections?

(nothing heard)

Treasurer's Report, Ned AC6YY: Checking: $10862, Cash: $0
A $1200 check sent to ASVARO (for the flea market), but they haven't cashed it yet.
Will the club have a table for members to sell stuff again this year?
Gregg KF6FNA: Yes, I think we will. Seems like it's starting to become a tradition.

Station Trustee's Report, Don K6PBQ: Nothing new to report

Standing Committees

Editor's report, Gary WB6YRU: SCCARA is hosting the July electronic flea market--we'll need info about that in the July edition. Who will be responsible for that, do we have a flea market chairman?
Gregg KF6FNA: We don't exactly have a chairman. I'll try to get something submitted.

BBS Sysop's report, Gary WB6YRU: There's a couple of bugs to work out with the new link to KQ6UP in So. CA. The issue is at his end, not much we can do here. Other than that the BBS is working fine.

Repeater Chairman's report, Goetz K6GKB:
Gregg KF6FNA: I've heard nothing new from Goetz, the repeater seems to be working OK.

Webmaster's report, Ned AC6YY: Nothing new to report

Old Business

Gregg KF6FNA:
At the general meeting we talked about a coax jumper board to easily connect radios and antennas at the club station. Gary, George, myself, and John have been working on that. Once we settle on a design, we can vote on the funding, and then construction can start.
We have a new HF beam to install on the roof, it's on hold right now. There's some thought that the tower might be too heavy for the roof. We're not ready to give up on that, more thought is needed. Some think an aluminum tower may be OK.
We have two Kenwoods that aren't working. Lou knows someone who might be interested... Still looking into that.
Gary WB6YRU: The board only needs to vote to dispose of them (as opposed to repair them), then they can be removed from the property list and that's that. The person charged with disposing of them can worry about the details like finding someone who wants them or sell for parts at the flea market or whatever.
Gregg KF6FNA: OK fine. But we don't have a quorum, we'll have to vote on that next time.

Field Day:
Gregg KF6FNA: The club will have hotdogs, hamburgers, etc. It would be nice to have two people working on that. I can work on that, anyone else interested in helping get the food for the BBQ?
(nothing heard) OK, I'll make some calls later.
Ned AC6YY: Are we going to set up laptops or what's the plan on computer logging?
Gregg KF6FNA: The way you did it last time worked fine. Are you available again this time?
Ned AC6YY: We have two PC's and one laptop. We'll need to update those, I can bring my router for that. On Saturday I can do the updates. On the following Friday we (I) can check everything.
Gregg KF6FNA: OK, thanks Ned. Lou, are you available to open the station this Saturday?
Lou WA6QYS: How about 8 am to noon?
Ned AC6YY: I have a 9 am net, if I can do that at the club station, then yes.

New Business

Greg KF6FNA: Any new business?
(nothing heard)

Meeting adjourned at 8:15 PM

Gary Mitchell WB6YRU, recording for the Secretary

Packet Pieces

Downloaded from the BBS packet network:

==========
Date: 6 Nov 2020 23:37
From: GM3YEW@GB7YEW
To: HUMOUR@WW
Subject: jokes 7/11

I'm not a complete idiot -- some parts are missing.

Newly Discovered Parchment

This parchment just unearthed in a 1902 time capsule found in the grounds of Farquar Manor, Kent.

"Please pass this parchment to your fellow gentlemen via royal mail postal service or messenger. What follows is a amusing and humorous account of living in the modern age in the year of our Lord 1902.

You know you are living in 1902 when:

1) Your chimney sweep is over the age of ten because of new fangled child labor laws.

2) You no longer play your pianissimo in the evenings as your right arm is weary from winding up the gramophone record player.

3) Working class people are allowed jobs in the same company as you.

4) You have twenty types of hat in your wardrobe, one for every occasion.

5) It is no longer illegal to shoot a Frenchman on sight.

6) You exchange your pony and trap for a one of those new motorcars and find that it is slower because the man with the red flag can only walk so fast.

7) You've seen a woman's ankle and not been obliged to marry her afterwards.

8) You feel nostalgic when you see toy soldiers with bright red tunics.

Physical

Giving a man his physical, a doctor noticed several dark, ugly bruises on his shins. So he asked, "Do you play

hockey, soccer, or any physical sport?"

"No. I play bridge with my wife."

Interesting True Tombstones!
---
* Harry Edsel Smith of Albany, New York:
Born 1903-Died 1942. Looked up the elevator shaft to see if the car was on the way down. It was.

* In a Thurmont, Maryland, cemetery:
Here lies an Atheist - all dressed up and no place to go.

* On the grave of Ezekial Aikle in East Dalhousie Cemetery, Nova Scotia:
Here lies Ezekial Aikle, Age 102. The Good Die Young.

* In a London, England cemetery:
Here lies Ann Mann, who Lived an old maid but died an old Mann. Dec. 8, 1767.

* In a Ribbesford, England, cemetery:
Anna Wallace: The Children of Israel wanted bread, and the Lord sent them manna. Old clerk Wallace wanted a wife, and the Devil sent him Anna.

* In a Ruidoso, New Mexico, cemetery:
Here lies Johnny Yeast... Pardon me for not rising.

* In a Uniontown, Pennsylvania, cemetery:
Here lies the body of Jonathan Blake. Stepped on the gas instead of the brake.

* In a Silver City, Nevada, cemetery:
Here lays The Kid. We planted him raw. He was quick on the trigger but slow on the draw.

* A lawyer's epitaph in England:
Sir John Strange. Here lies an honest lawyer, and that is strange.

* John Penny's epitaph in the Wimborne, England, cemetery:
Reader, if cash thou art in want of any, dig 6 feet deep; and thou wilt find a Penny.

* In a cemetery in Hartscombe, England:
On the 22nd of June, Jonathan Fiddle went out of tune.

* Anna Hopewell's grave in Enosburg Falls, Vermont:
Here lies the body of our Anna - done to death by a banana. It wasn't the fruit that laid her low, but the skin of the thing that made her go.

* On a grave from the 1880's in Nantucket, Massachusetts:
Under the sod and under the trees, lies the body of Jonathan Pease. He is not here, there's only the pod. Pease shelled out and went to God.

* To which someone replied by writing: "To follow you I'll not consent until I know which way you went."

Need Help?

Amateurs have a long history of helping each other. An experienced amateur who helps another is traditionally called an "Elmer." If you have a question or problem, you are encouraged to ask one of SCCARA's Elmers. Below is a list of topics and who to contact for each. If your topic isn't listed, ask one of the Elmers under the topic that comes closest and we'll ask around.

If you consider yourself to be reasonably competent in at least one area of amateur radio and would be willing help others, please fill out an Elmer form (available from the club secretary or on our web site).

Topics:
Antennas, feed-lines, tuners: **NV6W, W6JPP, K6PBQ**
CW (Morse code): **NV6W, K6PBQ**
DX (long distance, propagation): **NV6W**
EchoLink: **K6GKB**
Emergency operating, preparedness: **WA6QYS**
HF operating techniques: **NV6W, K6PBQ**
Homebrew projects, construction: **WB6YRU**
Legal, FCC rules: **WB6YRU**
License testing, new amateurs: **W6JPP**
Lightning protection, grounding: **WB6YRU**
Packet Network (BBS, forwarding): **WB6YRU**
SCCARA (club inner workings): **K6PBQ, WB6YRU, WA6QYS**
Station set-up, equipment: **K6PBQ, W6JPP**
TVI, RFI: **WB6YRU**

Contacts for the above topics:
K6GKB, Goetz Brandt, 408-259-7287
e-mail: goetz@ix.netcom.com

NV6W, James D. Armstrong, Jr.,
evening & msg: 408-670-1680

W6JPP, John Parks
e-mail: w6jpp@arrl.net

K6PBQ, Don Village, 408-263-2789

WA6QYS, Lou Steirer, 408-241-7999
e-mail: wa6qys@arrl.net

WB6YRU, Gary Mitchell, 408-269-2924
packet: home BBS N0ARY
e-mail: wb6yru@ix.netcom.com

Newsletter Notes

Our project meeting was just an experiment--an attempt to make the meetings (and the club) more interesting. This the first one, so we wanted something relatively easy and straight forward, like winding a balun. It grew into more than just that. And there were hiccups, the toroids hadn't arrived in time, so we had to continue at the next meeting.

And the results? It was *WAY* better than I had hoped! Members are using their baluns (or unun) on antenna projects and writing articles about it for this newsletter! How about that?

Obviously we're on to something here. Should we have a project meeting annually? If there's something you'd like to see us do next time, don't keep it a secret.

73, Gary WB6YRU, editor

Happy 250th !

SCCARA
Santa **C**lara **C**ounty **A**mateur **R**adio **A**ssociation
PO Box 106
SAN JOSE CA 95103-0106

FIRST CLASS

ADDRESS SERVICE REQUESTED

SCCARA Membership for 2026

If renewing and none of your info has changed, please only fill in your name and call

Name: _____ Call: _____ Class: _____

Address: _____ Licensed since (year): _____

City: _____ State: _____ Zip+4: _____

Telephone: _____ ☐ New Member ☐ Renewal ☐ I'm also an ARRL member

E-mail: _____

For delivery of the SCCARA-GRAM (pdf) and club announcements

Membership type and dues: ☐ **Individual, $20** ☐ **Family, $25** ☐ **Student, $10** (under 18)

☞ All memberships start January 1 and expire December 31. ☜
Family memberships (more than one member per household): please include the above info for each member, use separate forms.

New members:
Dues are prorated: dues x (11 - month) x 10% For example: July would be $20 x (11-7) x 0.1 = $8
If joining in November or December: normal dues for next year, the rest of this year is included free.

☐ **I want the paper newsletter delivered by U.S. Mail for an additional $15 per year**
Prorated, $1.25 per month. That's $13.75 if starting in February, $12.50 if starting in March, etc.)

$ _____ Total enclosed

Give this completed form and payment to the Secretary or Treasurer at any meeting or mail to the club address.

Rev. 11/1/2024